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GB 1459662 GB 1042727 GB 0881169
GB 1372624

(58) Field of search
E1D

(54) Spacer for concrete reinforcing steel

(57) A spacer for concrete reinforcing steel has a base part including two intersecting upright walls (10, 30), the transverse wall (30) being provided with a notched upper end, and clamping means including a pair of limbs (21, 22) extending opposite from the base part and curved toward each other. These limbs have a contiguous portion at their lower part to constitute a saddle for a reinforcing steel (3), such contiguous portion being made with a curvature substantially conforming to and separated from the notched end. The spacer is made of a material such that the limbs can resiliently press against such reinforcing steel (3) after it is clamped thereby, and each of the curved limbs (21, 22) is formed with a flange (201, 211) at the upper free end thereof, this flange (201, 211) including an inclined surface adapted to facilitate a reinforcing steel (3) being snapped between the limbs (21, 22) and tangentially to contact the reinforcing steel (3) that has been thereby clamped.

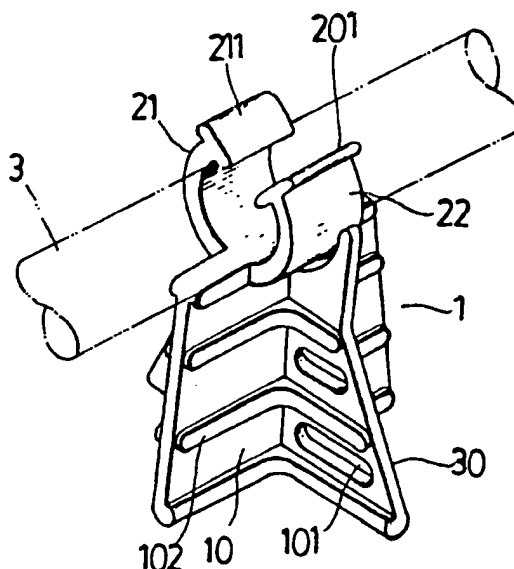


FIG. 3

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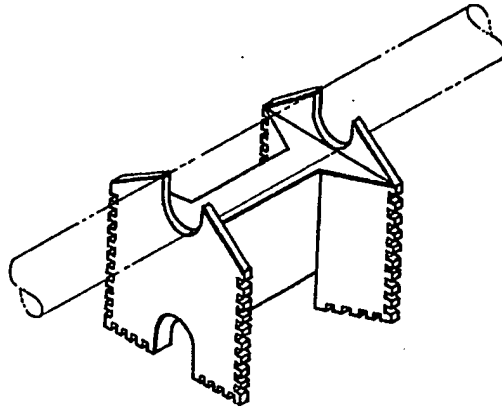


FIG. 1

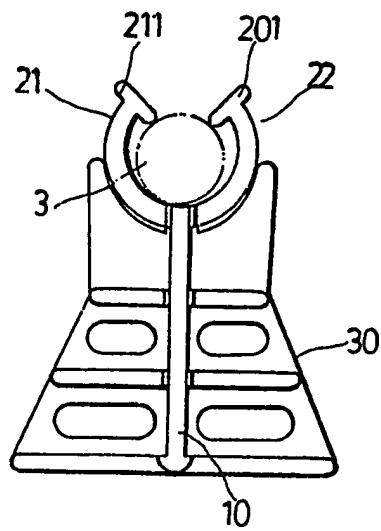


FIG. 5

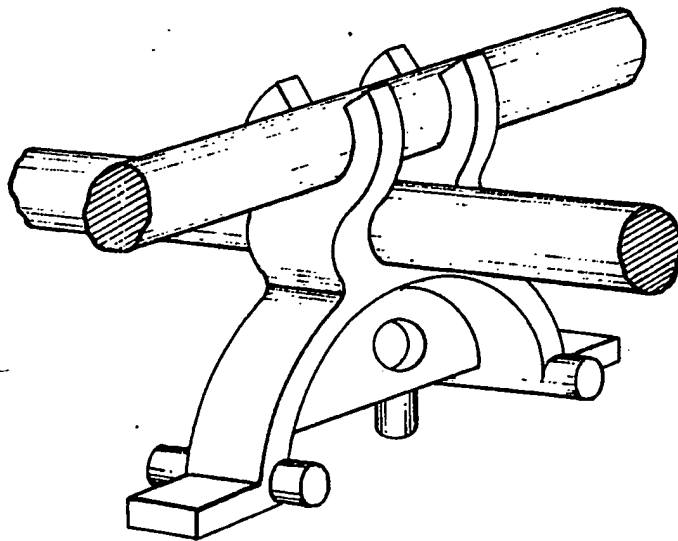


FIG. 2

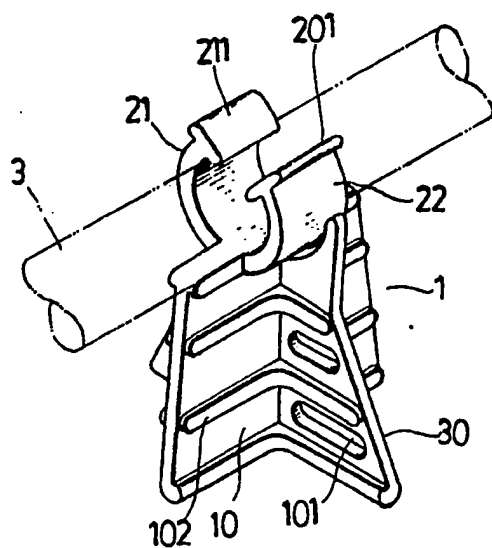


FIG. 3

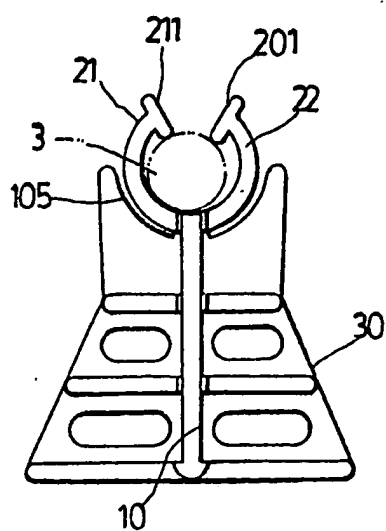


FIG. 4

SPECIFICATION

Spacer for concrete reinforcing steel

5 This invention relates to a spacing device for concrete reinforcing and particularly to an improved spacer of such type that can be adapted to support reinforcing steels of various diameters in place.

10 In the field of building, some works such as in the construction of a floor, the reinforcing steels should be placed in their accurate position during installation and while the concrete is being poured around them. In the prior art, a spacer or chair had been provided to eliminate the conventionally awkward and time consuming practice of tying reinforcing rods together with wire or welding the rods at intersections thereof. The prior art also eliminated the difficulty of keeping the reinforcing steel in true alignment and at a specified depth. For example, as shown in Fig. 2, the U.S. patent No. 3,788,025 discloses a chair, used for supporting in a right angular relation two reinforcing rods, which has a lower arched base part and an upper rod supporting part integral with the base, wherein the rod supporting part comprises two spaced arms, with the lower parts thereof forming a saddle for receiving one reinforcing rod and the respective upper part being formed by two spaced upstanding inwardly concave arms which hold a reinforcing steel therebetween. The chair is of integral construction and is formed of a material causing the arms of each pair to be biased toward each other to firmly hold a reinforcing steel therebetween. However, this kind of chair can merely be applied for use with a reinforcing steel of one diameter. As shown in Fig. 1, in my application for U.S. patent filed in May 9, 1983 and registered as serial number 493,329, a spacer comprises two spaced, parallel, upright members respectively having a first notch at the top thereof, both of the notches being in alignment for receiving a medium reinforcing steel in the upright members, a transverse member connecting the two upright members being provided with a second notch at the top side thereof for receiving and holding a reinforcing steel parallel to the upright members, wherein the upright members and the transverse members are provided with perforations and ridges for engagement with the concrete body, the spacer of such kind is also designed for holding reinforcing steel of one diameter with a certain device.

Therefore, it is a general object of this invention to provide a versatile spacer adapted to reinforcing steel of various diameters.

According to this invention, a spacer for supporting concrete reinforcing steel at the desired height above a supporting surface having a structure comprises a base part including an upright member; a transverse member

including a pair of curved limbs extending opposite from the upper portion of the base part and terminating in an upper free end respectively, and further includes the feature residing in that each of the curved limbs is provided with a flange at the upper free end which includes a surface extending transversely off the limb, the surface being inclined and adapted to facilitate the insertion of a reinforcing steel, projecting in a direction adapted to tangentially abut against the clamped reinforcing steel to restrain it from moving.

According to a further feature of preferred embodiments of this invention, the curved limbs have a surface at their lower part with a curvature substantially conforming to and separated from the notched end, made of a material such that after a reinforcing steel is clamped therein, it will resiliently press against the same.

The presently preferred exemplary embodiment will be described in detail with respect to the accompanying drawings, wherein:

Figure 1 is a perspective view of the spacing device according to my prior U.S. application;

Figure 2 is a perspective view of the spacer according to a preferred embodiment of U.S. patent No. 3,788,025;

Figure 3 is a schematical view showing a spacer according to this invention;

Figure 4 is a schematical elevation view showing a spacer according to this invention when holding a reinforcing steel;

Figure 5 is a schematical elevation view showing the spacer as shown in Fig. 4 when holding a reinforcing steel with a diameter greater than that of the reinforcing steel in Fig. 4.

Referring now to Fig. 3, a reinforcing steel 3 being supported by the spacer 1 is shown by broken lines. The spacer 1, preferably molded or cast of a plastic material, includes a base part having a longitudinal wall 10 parallel to the direction of the reinforcing steel 3 being supported and an intersecting transverse wall 30, the latter having a gradually increased width toward the lower end thereby providing better stability and rigidity of the structure.

As best seen in Fig. 4, the upper end of the transverse wall 30 is formed with a substantially arcuated notch 105. It can be seen that the upper end of the transverse wall 30 is positioned in a level lower than that of the longitudinal wall 10.

The longitudinal and transverse walls are further provided with ridges and perforations, typically as indicated in 102 and 101, which can improve the integrating of the concrete with the spacer after the concrete is poured, and the former even can improve the strength of the whole structure.

The clamping means is comprised of oppo-

site curved limbs 21, 22 which are extended from the longitudinal wall 10 near the upper end thereof, with a separation left between each curved limb and the corresponding upper edge 105 of the transverse wall 30, bent toward each other and contiguous in their lower parts thereof, being formed with a smooth, part-circular inner surface to provide a saddle for resting the reinforcing steel 3 in alignment with the axial direction of the longitudinal wall 10.

The limbs 21, 22 are made of a material such that they are sprung apart when a reinforcing steel is inserted between them, after which they resiliently engage the sides of the reinforcing steel 3 to clamp it tightly in place.

This invention provides a means to facilitate the insertion of a reinforcing steel, that is, the flange portions 201, 211 formed on the free ends of the curved limbs respectively at a substantially right angle with respect thereto. The flanges 201, 211 include a smooth inclined surface which makes the inserting of a reinforcing steel easier, and, after being held by the pair of curved limbs, the flanges 201, 211 will tangentially contact with the surface of the reinforcing steel to prevent it from undesired rotation or movement.

An important characteristic of this invention is that the spacer can suit reinforcing steel of different diameters. By way of illustration, in Fig. 4, the reinforcing steel being held is of a medium diameter, thus the separation between the steel and the wall can be maintained.

However, when a reinforcing steel with a diameter larger than the distance of the two limbs 21, 22, is inserted into the limbs 21, 22, as shown in Fig. 5, the opposite curved limbs will be forced to be stretched thus adapting to the diameter of this reinforcing steel.

The transverse wall 30 provides a support to the limbs 21, 22, with two upper sides thereof limiting the stretching of the limbs 21, 22, so that the reinforcing steel, including ones having a diameter larger than the normal distance between the two limbs 21, 22, can be supported well thereby.

CLAIMS

1. A spacer for supporting concrete reinforcing steel at the desired height above a supporting surface, having the structure including a base part with an upright member; clamping means including a pair of curved limbs extending opposite from the upper portion of said base part and terminating in an upper free end respectively, characterized in that each of said curved limbs is provided with a flange at said upper free end which includes a surface extending transversely from said limb, said surface being inclined and adapted to facilitate the inserting of a reinforcing steel, projecting in a direction adapted to

tangentially abut against the clamped reinforcing steel to restrain it from moving.

2. A spacer for supporting concrete reinforcing steel at the desired height above a supporting surface as claimed in Claim 1, further characterized in that said pair of curved limbs have a surface at their lower part with a curvature substantially conforming to and separated from said notched end, being made of such a material such that it adapts, after a reinforcing steel is clamped therein, to resiliently press against the same.

3. A spacer for supporting concrete reinforcing steel at the desired height above a supporting surface as claimed in Claim 1, which is integrally formed by a synthetic resin.

4. A spacer for supporting concrete reinforcing steel at the desired height above a supporting surface as hereinbefore described with reference to the accompanying drawings.

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